Office of Administrative Hearings
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Janet Napolitano
Governor

Cliff Vanell
Director

11/7/2007

Toni Towne, Clerk
Water Quality Appeals Board
100 N. 15th Avenue, Suite 402
Phoenix, AZ 85007

Re: 07-002-WQAB

SIERRA CLUB, GRAND CANYON CHAPTER, a not-for-profit corporation; and RED ROCK RURAL COMMUNITY ASSOCIATION

Appellant,

vs.

Arizona Department of Environmental Quality

Respondents

Dear Ms. Towne:

Please find the decision of the Office of Administrative Hearings for the above entitled matter.

Sincerely,

Cliff J. Vanell
Director

Mission Statement: We will contribute to the quality of life in the State of Arizona by fairly and impartially hearing the contested matters of our fellow citizens arising out of State regulation.

IN THE OFFICE OF ADMINISTRATIVE HEARINGS

SIERRA CLUB, GRAND CANYON CHAPTER, a not-for-profit corporation; and RED ROCK RURAL COMMUNITY ASSOCIATION Appellant, vs. Arizona Department of Environmental Quality Respondents	**No. 07-002-WQAB** **ADMINISTRATIVE LAW JUDGE DECISION**

HEARING: August 13 through August 16, 2007; the record was held open until October 18, 2007.

APPEARANCES: Appellant was represented by attorneys Howard M. Shanker and Laura Berglan, The Shanker Law Firm, PLC; Intervener BySynergey was represented by attorneys James J. Belanger, Carla A. Consoli and Joseph J. Orzano, Lewis and Roca; ADEQ was represented by Assistant Attorney General Curtis Cox.

ADMINISTRATIVE LAW JUDGE: Thomas Shedden

In March 2007 the Arizona Department of Environmental Quality ("ADEQ") issued an Aquifer Protection Permit (the "Permit") to Michael Zito (BySynergy LLC) for the Bella Terra Wastewater Reclamation Facility. Appellant Sierra Club, Grand Canyon Chapter and Red Rock Rural Community Association filed an appeal requesting that the Permit be rescinded based on 10 counts. An evidentiary hearing was held on August 13 – 16, 2007. Based on the evidence of record, and the written arguments of counsel, the Administrative Law Judge enters the following Findings of Fact, Conclusions of Law and Recommended Order.

Office of Administrative Hearings
1400 West Washington, Suite 101
Phoenix, Arizona 85007
(602) 542-9826

FINDINGS OF FACT

The Findings of Fact are in three sections: Background, Summary of Each Witness' Testimony, and Specific Findings for Each Count.

BACKGROUND

1. BySynergy LLC is constructing the Bella Terra subdivision in Sedona Arizona on about 53 acres located near the confluence of Carroll Canyon Wash and Oak Creek.[1]

2. Wastewater from those homes will be treated at the Bella Terra Wastewater Reclamation Facility (the "Facility").

3. On March 30, 2007 ADEQ issued APP No. P-105588 (the "Permit") for the Facility. Exhibit 85.

4. The Permit authorizes a discharge of 14,910 gallons per day through drip lines to 64,000 square feet of disposal fields. *See* Exhibit 85. The Facility has a design capacity of 24,910 gallons of domestic wastewater per day.

5. The Permit had been subject to two review and public comment periods.

6. The first formal public comment period was held from May 5 to June 5, 2006; the public hearing was held July 20, 2006.

7. On September 29, 2006 ADEQ issued its second preliminary decision to issue an APP. Formal comments were accepted from September 29 to November 1, 2006, and a public hearing was held November 1, 2006. ADEQ also held a public meeting on August 30, 2006.

THE HEARING

8. On March 9, 2007 Sierra Club, Grand Canyon Chapter and Red Rock Rural Community Association ("Appellant") filed an Amended Notice of Appeal ("NOA") consisting of 10 counts and requesting that the Permit be vacated.

9. On April 9, 2007 the Water Quality Appeals Board issued a Notice of Hearing setting the matter to be heard at the Office of Administrative Hearings.

10. BySynergy intervened and the hearing was held on August 13 – 16, 2007. The

[1] BySynergy bought the land from Mr. Fred Schuerman on July 26, 2002. The property was being used as an auto salvage yard and had approximately 26 mobile homes served by three septic systems at that time. Mr. Schuerman's affidavit describes the history and use of the land. *See* Exhibit 539.

record was held open to allow the parties to submit written closing arguments.[2]

11. After the ALJ received those closing arguments and the record had closed, ADEQ filed a Response to Appellant's closing and Appellant then filed a Reply. The ALJ issued an Order stating that these filings would not be considered because the record had closed. On reconsideration, the ALJ determined that the late filings should be considered and the record was reopened to allow the parties to address issues raised by ADEQ's Response.

12. Appellant presented the testimony of: (1) Barbara Boelter, a member of Red Rock Rural Community Association ("RRRCA"); (2) Brian Myers, vice president of "RRRCA"; and (3) Dr. Paul Trotta P.E., an engineer and professor at Northern Arizona University.[3] By subpoena, Appellant also presented the testimony of Tito Comparan, a hydrogeologist formerly employed by ADEQ.

13. ADEQ presented the testimony of: (1) Michele Robertson, Manager of ADEQ's Groundwater Section; (2) Linda Taunt, Deputy Director of ADEQ's Water Quality Division; (3) Maribeth Greenslade, the APP project manager; and (4) Jeanette Black, a hydrologist.

14. BySynergy presented the testimony of: (1) Dwight Zemp, an engineer and vice president of Santec Corporation; (2) Michael Zito, managing member of BySynergy LLC; (3) Arthur Beckwith P.E., an engineer with Shephard-Wesnitzer; (4) Scott Journell P.E., with Southwest Groundwater Consultants; and (5) David Monihan P.E., an engineer with Shephard-Wesnitzer.

15. ADEQ Exhibits 1 through 208 were admitted into evidence, some of which have multiple parts. These exhibits are all part of ADEQ's administrative record. ADEQ did not submit into evidence the entire administrative record, but provided each party with a list and description of the portions of that record that were not submitted.

16. BySynergy Exhibits 504, 512, 515, 519, 520, 521, 526, 539, 546, 547, 548 and 549 were admitted into evidence. Appellant Exhibits 1013, 1058, 1059, 1060, 1062 and 1063 were admitted into evidence.

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[2] References to the parties are intended to include BySynergy as well as Appellant and ADEQ.

[3] Dr. Trotta's testimony is given no appreciable weight, for the reasons set forth in the section addressing his testimony.

WITNESS TESTIMONY

Ms. Boelter

17. Ms. Boelter is a member of Appellant Red Rock Rural Community Association.

18. Ms. Boelter lives about ½ mile from the Bella Terra site where she has lived for about 2 ½ years.

19. Ms. Boelter is a residential designer who works on homes and small buildings for which registration as an architect is not required.

20. Ms. Boelter did not have BySynergy's permission to enter the Bella Terra site, but she has entered the site a number of times.

21. According to Ms. Boelter the FEMA map showing the 100 year floodplain is not correct because the Army Corp of Engineers realigned the Creek after a flood in 1980. Ms. Boelter testified that she had compared the FEMA maps and the County GIS information. Ms. Boelter has reviewed photographs and USGS records and gotten verbal accounts of flooding events from which she determined that Oak Creek may rise as much as 20 feet and carry up to 20,000 cubic feet per second. Ms. Boelter has spoken to a number of Yavapai County officials and others about her concerns.

22. Ms. Boelter did not provide a sufficient basis on which to conclude that she has the requisite expertise to determine that a FEMA map is incorrect and Ms. Boelter did not provide any information to confirm her testimony.

23. In contrast, Mr. Beckwith, a registered engineer sealed plans showing that no part the Facility or the disposal fields are in the 100 year floodplain and, he provided credible testimony to that effect. Ms. Black confirmed that the disposal fields are not in the floodplain.

24. Exhibit 1063 is a "stop work" order from Yavapai County showing that grading had exceeded the scope of the permit. Ms. Boelter testified that she was told that the stop work order would be in effect until a new permit was issued. According to Ms. Boelter, grading has occurred in the disposal field area. Even accepting this evidence as true, it does not provide a basis to conclude that ADEQ decision to grant the Permit was arbitrary, unreasonable, unlawful, or based on a technical judgment that is clearly invalid.

25. Ms. Boelter asserted that BySynergy has placed on the site excessive fill that does not meet with the approved plans, but there was no evidence adduced to verify this allegation.

26. Ms. Boelter testified that she has seen areas where the silt fences were either down or in disrepair and that since late 2006 she has never seen the silt fences in good repair. Mr. Myer provided similar testimony, and Mr. Beckwith agreed that photographs show that the silt fencing was not always in good repair. *See* Exhibit 1060 (photographs). But Mr. Beckwith also provided credible testimony that silt fences are subject to degradation from a number of sources and that silt fences require regular maintenance. ADEQ officials have investigated the silt fences and storm-water drainage issues and although there have been some deficiencies no Notices of Violation ("NOVs") have been issued to BySynergy. ADEQ considered this information during its review of the Application and ADEQ found that it did not warrant denying the Permit.

27. Carroll Canyon Wash rarely flows, but there is typically back flow from Oak Creek in this area. According to Ms. Boelter, she took photographs of an oily sheen on the water in an area directly adjacent to Bella Terra, but the photographs do not actually show the sheen. *See* Exhibit 1060 at Bates Nos. 465 and 466. Ms. Boelter did not take any water samples and did not report her observations to ADEQ. This testimony carries no appreciable weight because there is no evidence to show that the sheen was caused by BySynergy or that the sheen was representative of any violation.

28. Exhibit 1060 at Bates No. 466 shows what Ms. Boelter described as debris including concrete in a small wash on or near the Bella Terra property and Ms. Boelter testified that she has seen tree-removal debris in washes. This testimony does not demonstrate that BySynergy has violated any laws and carries no weight with respect to whether or not ADEQ's action in granting the Permit was arbitrary, unreasonable, unlawful, or based on a technical judgment that is clearly invalid.

Mr. Myers

29. Mr. Myers is vice-president of Red Rock Rural Community Association ("RRRCA") and he lives about 1/8th to a 1/4th mile from Bella Terra.

30. Mr. Myers also owns an additional 3 acres close to Bella Terra that Mr. Myers has subdivided into 4 lots.

31. Mr. Myers did not believe that he had reviewed all of ADEQ's requests for BySynergy to provide ADEQ information, nor had he reviewed BySynergy's responses to those requests.

32. RRRCA was formed to give the local residents a voice in the area and to preserve the rural quality of the area. RRRCA is concerned with any source of pollution that may affect Oak Creek. Currently it is dealing with new development such as Bella Terra, but it will eventually work on existing sources of pollution.

33. Mr. Myers has walked around the Bella Terra site about 12 times, with the first time being about 1 ½ years ago, but Mr. Myers has never been on the Bella Terra site.

34. Mr. Myers is concerned that effluent from the Facility will cause pollution in Oak Creek because there are a lot of small faults in the bedrock in the area through which the effluent could reach Oak Creek. Experts from ADEQ provided credible testimony to the contrary, and Mr. Myers' assertion is not sufficient to show that ADEQ's technical determination is clearly invalid.

35. Mr. Myer testified that the EPA had conducted a site visit at Bella Terra about three months before the hearing and that a representative from the EPA told him that she was concerned about the condition of the silt fences and about wetlands. This may be true, but it is too vague to be given any weight.

36. Mr. Myers testified that he has inspected the silt fences at the site and he has seen silt fences in disrepair. Mr. Myers' testimony, when weighed against the facts that ADEQ considered the issues related to storm water before it issued the permit and no Notices of Violation ("NOVs") were ever issued to BySynergy, is not sufficient to show that ADEQ's decision was arbitrary, unreasonable, unlawful, or based on a judgment that is clearly technically invalid.

37. Mr. Myers testified that he and Kevin Hansen were taking photographs of the Bella Terra site in the fall of 2006 and they saw a lot of silt from the Bella Terra site entering the Carroll Canyon Wash. *See* Exhibit 1059 at Bates No. 460 (showing red water in Carroll Canyon Wash). According to Mr. Myers, they walked upstream, but they did not take photographs of the silt washing off Bella Terra or the condition and color of the water above Bella Terra.

38. Carroll Canyon Wash drains about 3,890 acres, the majority of which is upstream of Bella Terra, and it is virtually inconceivable that the Wash was not carrying red silt upstream of Bella Terra. Given that Mr. Myers and Mr. Hanson were opposed to the Permit being issued and were out taking photographs (presumably to be used in opposition to the Permit) it is reasonable to conclude that if they had observed silt washing off the Bella Terra site they would have photographed that silt. Mr. Myers' testimony on this point and Exhibit 1059 are not given any appreciable weight.

39. Mr. Myers believes that the Facility will be similar to the WWTP at the Cross Creek development. Mr. Myers has heard that the Cross Creek WWTP requires groundwater to be added at low flows and is concerned that the Bella Terra Facility will also require pumping of groundwater. Mr. Zemp testified that the Facility has a modular design and will operate as a batch plant at low flows so that supplemental groundwater will not be required. Consequently, Mr. Myers' testimony on this issue, which is actually just speculation, is given no weight.

Dr. Trotta

40. Dr. Paul Trotta is a Professor at Northern Arizona University and registered as both a Civil and Sanitary Engineer. Dr. Trotta has about 30 years experience in sanitary engineering.

41. Dr. Trotta's testimony does not meet the basic requirement that evidence must be reliable and probative because Dr. Trotta did not demonstrate that he considered fully or understood the Permit and supporting documentation and because Dr. Trotta used a definition of BADCT that does not conform to the applicable statute. *See* A.R.S. § 41-1092.07(F); *see also* Arizona Rule of Evidence 702. Mr. Monihan provided credible testimony that demonstrates a potential bias on Dr. Trotta's part. *See* Mr. Monihan's testimony below. Dr. Trotta's testimony and opinions are accorded no appreciable weight.

BADCT

42. Dr. Trotta testified that he did not consider the rules explicitly or specifically, and he considered only general statements about BADCT in forming his opinions about whether the Permit meets the BADCT requirements.

43. Dr. Trotta's opinion is that the Permit does meet the BADCT standard, but the ALJ gives this no weight in light of Dr. Trotta acknowledgement that he did not apply the appropriate law in forming that opinion.[4]

44. According to Dr. Trotta, BADCT means different things to different people and BADCT is not static. Dr. Trotta's opinion was based on his knowledge of evolving technology being presented at conferences and journal articles.

45. ADEQ is required to grant the APP if BySynergy meets A.R.S. § 49-243(B), which includes the BADCT requirements. Because Dr. Trotta's opinions related to BADCT are not based on the applicable rules and law, these opinions are not probative of whether ADEQ's decision was arbitrary, unreasonable, unlawful, or based on a technical judgment that is clearly invalid.

DESIGN OF THE DISPOSAL FIELDS

46. Dr. Trotta testified that there was no data on which to evaluate whether or not the disposal fields are adequate to accept the discharge and that there was no rational basis for the design. This is incorrect; BySynergy witness Mr. Monihan provided a detailed analysis of the information available and the procedures generally followed in conducting percolation tests. *See* Mr. Monihan's testimony. Dr. Trotta provided similar testimony about percolation-test procedures, which shows that these procedures are generally accepted by engineers.

47. Dr. Trotta also testified that he had no idea how the engineer got the (disposal) application rate. Not only is this information in the documentation ADEQ considered, but Dr. Trotta actually testified about much of it, including testimony about the percolation tests and the test-hole data from the site. Dr. Trotta agreed that the percolation tests show that the disposal fields could support a discharge of about 0.6 gallons per day per square foot or about 3 times the Permitted value.[5]

DISCHARGE LIMITATION

48. Dr. Trotta did not understand that the Permit has a discharge limit of 14,910 gallons per day (based on the disposal rate of 0.219 gallons per day per square foot

[4] Appellant alleges a violation of BADCT in 7 counts and, arguably, this admission that the standard was met could be considered as a sufficient basis to dismiss those 7 counts.

(gpdpsf) of disposal field), and his testimony was predicated on the erroneous belief that the discharge limit was 24,910 gpdpsf.

GRADING ISSUES

49. Dr. Trotta asserts that the site has been graded and soil has been removed, which in his opinion would mean that the percolation test results are no longer valid. But Dr. Trotta admitted that he had no evidence that soil had actually been removed from the site and his assertion is based on implication from photographs including aerial photographs.

50. The evidence does not support a finding that the disposal fields have been graded as Dr. Trotta asserts or that the percolation tests are not valid. Mr. Zito gave credible testimony that the site has not been graded to remove soil (vegetation has been removed from the site) and the Permit requires that an engineer verify that the Facility is build based on the plans submitted and approved, which includes the percolation testing.

Mr. Comparan

51. Mr. Comparan is a hydrologist who worked in the APP section of ADEQ from November 1996 to January 2006. Since January 2006 he has worked for the Arizona Department of Water Resources.

52. Appellant asserts that during Mr. Comparan's review of the Application, Mr. Comparan raised issues about the hydrogeology that were not satisfactorily answered, and Appellant had Mr. Comparan subpoenaed to testify.

53. Mr. Comparan's testimony does not support Appellant's position, and to the contrary, Mr. Comparan gave credible testimony that all his questions about the hydrogeology were satisfactorily answered. Mr. Comparan's hydrogeology review was based on requirements of the administrative code, and Mr. Comparan was satisfied the Application met those requirements. *See* A.A.C. R18-9-A202(A)(8).

54. Mr. Comparan recalled the BySynergy application by reference to the Bella Terra project name. Mr. Comparan's knowledge of the Bella Terra site geology was limited to information in the APP application.

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[5] Dr. Trotta testified that the estimated application rate can be determined using a simple formula: 2 divided by the square root of the percolation test rate. At BySynergy the percolation rate is 10.

55. Mr. Comparan may not have seen the final Permit because that Permit was issued after he left ADEQ.

56. During his review of the BySynergy Application, Mr. Comparan prepared several emails in which he was requesting more information from BySynergy. *See* Exhibits 40 (dated October 14, 2005) and 38 (dated October 25, 2005). Exhibit 38 incorporates the issues raised in Exhibit 40. BySynergy provided the required information in a letter prepared by Curtis Engineering on January 4, 2006. *See* Exhibit 8.

57. Mr. Comparan prepared another request for information on January 18, 2006 in which he did not request that BySynergy provide any hydrogeologic information. Mr. Comparan's questions with respect to hydrogeology had been answered when he prepared the January 18th request or he would have asked the unanswered questions again. *See* Exhibit 37.

58. Because of licensing-timeframe limits, some of Mr. Comparan's emails may never have been sent to BySynergy, and Mr. Comparan did not sent his emails directly to BySynergy (i.e., these emails were routed through ADEQ personnel).

THE 2002 HYDROGEOLOGIC INVESTIGATION

59. Mr. Comparan was asked a number of questions about the 2002 Hydrogeologic Investigation prepared by Southwest Groundwater Consultants (Exhibit 501) that was submitted by BySynergy in support of its Application.

60. During his tenure at ADEQ, Mr. Comparan reviewed hundreds of hydrology reports and he could not independently recall that he had seen the 2002 Hydrogeologic Investigation. If that report was part of the BySynergy Application he would have seen and reviewed the report during his review of the Application.

61. The 2002 Hydrogeologic Investigation was initially prepared as part of a water adequacy study. A report prepared for a water adequacy study would not be much different from a report prepared to demonstrate where effluent might flow, because both would deal with the flow of water. A report dealing with effluent flow should have more information with respect to the shallow subsurface soils. The well drillers logs attached to the 2002 Hydrogeologic Investigation have this type of soils information.

62. Appellant's counsel asked Mr. Comparan to show where in the 2002 Hydrogeologic Investigation, the questions that he raised in Exhibit 38 were answered.

Mr. Comparan quickly responded that question 2 is answered by the well borings; question 4 is answered in sections 3.1 through 3.4; question 5 is answered by figure 5 and the other maps; and question 6 is answered in section 3.1.

63. Question 13 asks specifically about the fate of effluent at the Bella Terra site and Mr. Comparan did not expect to find that information in the 2002 Hydrogeologic Investigation. Ms. Black's testimony shows that other material submitted BySynergy answers question 13.

FATE OF EFFLUENT and PERCOLATION TESTS

64. At the hearing, based on the information he was presented, Mr. Comparan would not be confident as to where the effluent from Bella Terra would go. But that was because such a determination would take a significant amount of time. While working at ADEQ, Mr. Comparan had devoted significant time to a review of the Application.

65. To determine the fate of effluent, Mr. Comparan would need the information specified in A.A.C. R18-9-A202.

66. At the time BySynergy filed its Application BADCT was required.

67. There are Karst materials underlying the Bella Terra site. Karst materials are non-uniform rock materials that are cemented together with eroded areas that can allow water to flow through. Permeability would vary by location in Karst material.

68. Mr. Comparan did not determine that there is fractured bedrock under the Bella Terra site.

69. If a percolation test was conducted and then the soil was subsequently graded, Mr. Comparan would not necessarily find that new tests were required. The depth at which the tests were conducted and the amount of soil removed would need to be known, and if there were other sources of data, such as soil borings with soil properties given, a new percolation test might not be required at all.

CONTINGENCY PLAN

70. Mr. Comparan always considered whether an applicant for an APP should be required to submit a contingency plan, but for many APPs no contingency plan is required. A contingency plan is included as a back-up in case there is a permit violation or an alert level is exceeded.

71. Mr. Comparan requested a contingency plan from BySynergy. *See* Exhibit 37 (January 18, 2006 email). This request was made in part because Mr. Comparan did not find that because Oak Creek is a losing stream (no connection between the aquifer and the Creek) that that necessarily meant that there would be no connection between the disposal fields and Oak Creek, because water will follow the path of least resistance and can move laterally.

72. Mr. Comparan did not see any response to his request for a contingency plan before he left ADEQ.

73. A contingency plan was included in the Permit and the Permit includes the Sentinel Well and monitoring of Carroll Canyon Wash. Others witnesses provide substantial credible evidence that the effluent will not reach Oak Creek. *See e.g.,* testimony of Mr. Monihan; Mr. Journell; Ms. Black. Consequently, the preponderance of evidence shows that Mr. Comparan's concerns were addressed, and there is no basis to conclude that ADEQ's decision was arbitrary, unreasonable, unlawful, or based on a technical judgment that is clearly invalid.

Ms. Robertson

74. Ms. Robertson is the manager of ADEQ's Groundwater Section and oversees a staff of 55. There are 5 units in the groundwater section, 4 of which work on individual permits.

75. Ms. Robertson is involved in the final review of APP applications and in decisions related to policy questions.

76. Ms. Robertson's opinion is that the Permit is clear and the limits are strict.

77. The rules currently applicable to APPs became effective on November 12, 2005. The rules for the substantive review are found in A.A.C. R18-9 Article 2.

78. All owner-operators that discharge to the land surface and all categorical dischargers are required to have an APP. The Facility is a categorical discharger.

79. APP applications are typically processed in 9 to 12 months. The review process has two phases. In the administrative phase the application is checked to verify that all the "pieces" are present. These pieces include: a description of the facility; BADCT; the hydrogeology; financial requirements; and zoning. In the substantive phase the pieces are checked to verify whether or not they are adequate.

80. After ADEQ makes a preliminary determination to grant or deny an APP, it publishes Notice of that determination and opens a 30 day comment period. Public hearings are not required, but are held if there is a significant public interest or ADEQ believes it is important.

81. ADEQ is required to provide written responses to all comments it receives. *See* Exhibit 89 (summary of all comments and ADEQ's responses). A copy of Exhibit 89 was provided to all those that attended the public hearing and was also posted on ADEQ's website.

FACT SHEET

82. ADEQ's Public Relations department prepared a two page Fact Sheet regarding the Permit. *See* Exhibit 93A. Ms. Robertson believes that the Fact Sheet is accurate, but the Fact Sheet was written by lay people for lay people. ADEQ does not consider this Fact Sheet to have been a requirement of A.A.C. R18-9-109.

83. The Fact Sheet states that as many as 53 septic systems could have been installed on the Bella Terra site based on the rule that allows one septic system per acre.

84. Whether or not 53 systems would actually be approved is not an issue that can be answered in the abstract, because ADEQ additional testing would be required and approval would be on a lot by lot basis with each lot requiring a permit.

85. Under the applicable rules, on-site disposal systems are not required to have any nitrogen loading requirements where limited to 1 system per 1 acre lot. There are many types of on-site wastewater systems, and it is possible that some of the 53 on-site disposal systems might not have been simple passive septic systems.

86. ADEQ has issued 48 general APPs, including one that regulates septic systems.

BADCT

87. BADCT is defined at A.R.S. § 49-243(B)(1). Presumptive BADCT is a statutory provision allowing ADEQ to set rules for a class of facilities. *See* A.R.S. § 49-243.01. Presumptive BADCT rules have been established for sewage treatment facilities and are found at A.A.C. R18-9-2, Part B. If a sewage treatment facility meets these Presumptive BADCT rules, then that facility has met the statutory requirements.

88. The presumptive BADCT rule is a performance-based approach. Under this approach, ADEQ does not prescribe the technology or methods to be used, and instead requires that the WWTP meet the standards. The presumptive BADCT rule has a number of requirements, all of which must be met for an APP to issue.

89. The BADCT rules allow ADEQ discretion to allow a WWTP to use soil aquifer treatment ("SAT") as part of the process, but SAT is not BADCT. The Facility will not use SAT and must meet BADCT at the point of discharge.

90. In determining whether or not to allow SAT, ADEQ will consider the site's specific soil characteristics. Consequently, although the site-specific soil characteristics are not important for BADCT, but such soil characteristics are considered for other parts of the APP process.

91. The AWQS are part of Presumptive BADCT. A WWTP must meet the AWQS for all pollutants for which such standards exist. AWQS are adopted when EPA sets a new MCL for drinking water. *See* A.R.S. § 49-223. For substances for which there is no AWQS, ADEQ can require monitoring of indicator compounds.

92. The Permit requires sampling for e coli and a showing that 4 of 7 samples are non-detect ("ND"). Laboratory methods are not perfect, and Ms. Robertson did not agree that requiring only 4 of 7 samples to be ND is not the same as zero allowable pathogens.

93. The Permit also requires that 4 of 7 samples for enteric virus be ND.

EMERGENTS and INDUSTRIAL TOXICS

94. Studies done at the University of Arizona show the activated sludge WWTPs remove 99% of emerging contaminants. ADEQ is not regulating these substances because EPA has not yet completed epidemiology or toxicology studies.

95. For industrial wastewater there is a concern with toxics. Three options are available: pretreatment; local limits; and for residential areas, monitoring. Monitoring for metals is standard; monitoring for VOCs is also required. *See* A.R.S. § 49-243(I).

Reuse of Effluent

96. Reuse of wastewater or effluent (i.e., reclaimed water) is not part of BADCT, and is subject to rules found in A.A.C. R18-11 Article 3. There are 5 classes of reclaimed water, with A+ the most stringently regulated.

97. For a reuse permit to issue, a WWTP must first be classified as a reuse facility. This reuse-classification is done in the APP, but the APP does not allow reuse.

98. Reuse does not allow disposal to the aquifer.

Ms. Greenslade

99. Ms. Greenslade is Unit Manager in the Technical Support division. Ms. Greenslade has been with ADEQ since February 2006, but also worked for ADEQ from 1992 to1998.

100. Ms. Greenslade's duties include managing the engineers and hydrologists that review APP applications. She has been project manager for about 12 to 15 APP applications.

BYSYNERGY'S APPLICATION

101. Ms. Greenslade was the project manager for the BySynergy Application beginning in September 2006. Prior to that time Mr. Kaumil Parghi and Ms. Vanita Bhatt had been the project managers.

102. The hydrologic review was conducted by Mr. Comparan and Ms. Black. Engineering review was conducted by Mr. Parghi, Ms. Sujana Attaluri and Ms. Greenslade.

103. The APP Application was received on January 31, 2005 and was sealed by Mr. Evan Curtis, P.E. *See* Exhibit 22. Mr. Curtis also sealed a WWTP design report and a Response to Administrative Completeness Review that are part of the Application. *See* Exhibits 113 and 112. An engineering report sealed by Mr. Beckwith was attached to the APP Application. *See* Exhibit 115. Exhibits 112, 113 and 115 were all considered in the engineering review.

104. The final engineering review for the original submission was completed in October 2005. Based on that engineering review, ADEQ determined that BySynergy had demonstrated that it met the applicable requirements. *See* Exhibit 31.

105. The Facility system is an extended aeration WWTP with de-nitrification, filtration and ultraviolet disinfection, with effluent discharged to subsurface irrigation. The design flow is 24,910 gallons per day.

106. Initially the design called for use of chlorine, but in response to public comment and concern, BySynergy voluntarily changed to UV. *See* Exhibit 57. The design calls for

tertiary sand filtration prior to UV disinfection. Such filtration reduces turbidity and improves the UV disinfection. Turbidity reduction is not part of BADCT but the sand filtration is an acceptable method to produce A+ effluent.

107. Total nitrogen in the effluent is limited to less than 10mg/l, with monitoring required. *See* Exhibit 85 at Table IA.

108. Before any discharges are made, BySynergy is required to submit documentation verifying that the system was constructed according to the design specifications.

109. The Facility will operate in an extended aeration mode at low flows. Ms. Greenslade's opinion is that this is reasonable and will assure proper treatment. Supplemental groundwater should not be required to meet the performance standards with this design.

BADCT

BADCT for the project is demonstrated in Section 3 of Exhibit 113. The demonstration is that of Presumptive BADCT through treatment methods. There was a revision from the original treatment standards for pathogen reduction because the site is underlain by Karst formations. By rule, the most stringent pathogen reduction is required for areas with Karst geology. *See* A.A.C. R18-9-B204; *see also* testimony of Ms. Black.

A+ EFFLUENT

110. The Permit requires the Facility to produce class A+ effluent.

111. A+ effluent meets the AWQS. The AWQS must be met without soil aquifer treatment ("SAT"). The specific site soil characteristic were not considered as part of the demonstration of BADCT, but those characteristics were considered to determine what level of treatment was required.

DISPOSAL FIELDS

112. Mr. Beckwith sealed the design for the disposal fields. *See* Exhibit 115.

113. Originally BySynergy planned to dispose of the entire design flow on only one disposal field (which plan was approved by ADEQ), but after the first public comment, BySynergy agreed to limit the effluent disposal to 14,910 gallons per day and increased the disposal area from 34,000 square feet to 68,000 square feet. Exhibits 51 and 128

are letters sealed by Mr. Curtis that detail these changes to the design. These changes were included in the Permit itself.

114. The Permit limits the discharge to 0.219 gallons per day per square foot of disposal field (i.e., 14,910 gallons per day). ADEQ did not rely on any turf consumption, but turf at the site is expected to consume about 0.145 inches per day (0.09 gallons per day per square foot of disposal field), which consumption could reduce the percolation rate.

115. The locations of disposal fields 1, 3 and 4 are specified in the Permit by latitude and longitude and also in a site map. *See* Exhibit 85. As originally designed there was a disposal field 2, but that filed was eliminated given its location in relationship to the 100 year floodplain.

SENTINEL WELL and MONITORING CONDITIONS

116. ADEQ requested that a monitoring well be installed between disposal field 1 and Carroll Canyon Wash. This well (the Sentinel Well) will be used to monitor fluid in the alluvium. Prior to discharge from the WWTP, ambient conditions will be determined and after discharge starts monitoring is intended to reveal whether water quality or water quantity in the well changes.[6]

117. The Sentinel Well is not required for compliance with BADCT and it is not typical to include such a condition in an APP. Ms. Greenslade has not seen such a requirement included in any other APP. The Sentinel Well was added as a condition after public comments expressed concern that effluent might migrate to Carroll Canyon and then to Oak Creek. Disposal fields 3 and 4 are far enough from Carroll Canyon Wash (up to 1,400 feet) that there is less concern with migration from these fields.

118. It is not expected that there will be industrial pollutants in the wastewater, but the APP requires monitoring for these pollutants.

119. The Permit requires BySynergy to make weekly inspections of the Facility, the disposal fields, and of Carroll Canyon Wash for seepage from disposal field 1. *See*

[6] Dr. Curtis expressed concern that water from Carroll Canyon that is known to be contaminated might migrate from the Canyon into the Sentinel Well. Dr. Curtis's opinion is that whether or not such migration occurs should be apparent by comparing flows in Carroll Canyon with the appearance of water in the Sentinel Well.

Exhibit 85 (Table III). ADEQ typically conducts its own inspections of facilities once a year.

STORM WATER and SECTION 404

120. ADEQ received complaints alleging that BySynergy was not in compliance with its storm water permit ("SWPPP"). In response, ADEQ's Northern Regional Office ("NRO") inspected the Bella Terra Site. ADEQ determined that there had been no discharges from the site to any surface waters, but that there were deficiencies in the best management practices ("BMP"). No Notices of Violation were issued.

121. ADEQ received comments alleging that BySynergy was in violation of Section 404 requirements. ADEQ does not have primary enforcement authority with respect to Section 404 issues, the Army Corp of Engineers does. Prior the APP being issued there were no Section 404 violations. There was a later violation, but BySynergy has received the appropriate permit(s) and meets the Section 404 requirements. *See* Exhibit 549.

122. Ms. Greenslade reviewed this information and participated in discussions as to whether or not the SWPPP deficiencies and Section 404 allegations were sufficient to deny the Permit. ADEQ determined that these issues did not provide a basis for denial.

Ms. Black

123. Ms. Black has a B.S. in geology. She started working on APPs at ADEQ in 1990 and estimates that she has reviewed close to 1000 APP applications.

124. Ms. Black was involved in the hydrologic review of the BySynergy application. Ms. Black keeps her review notes on a computer generated form that lists the relevant rule, A.A.C. R18-9-A202(A)(8). Ms. Black found that the geologic information submitted with APP Application met the applicable rule.

125. The hydrologist will consider BADCT, AWQS, and the method of disposal.

BADCT

126. Because the Facility is located in an area known to have potential fractured or Karstic bedrock, Ms. Black recommended that the more restrictive BADCT standard be used.

127. Site specific geologic characteristics are considered to get the information required to demonstrate that the AWQS are met at the point of compliance. Site specific information may also used in the engineering/BADCT review.

128. Ms. Black's Application review included the 2002 Hydrogeologic Investigation (Exhibit 501) and ADEQ and Arizona Department of Water Resources ("ADWR") databases.

129. The ADEQ databases give information on groundwater quality and drinking water. The ADWR databases give information on wells and well construction. Ms. Black's opinion is that these sources do provide site specific data.

AQUIFERS

130. The 2002 Hydrogeologic Investigation reported that there were two aquifers in the area: the Supai formation with water at about 150 feet below ground surface ("bgs") and the Redwall Limestone formation with water at about 300 to 400 bgs. Ms. Black consulted the agency databases to verify that the 2002 Hydrogeologic Investigation was accurate.

131. Ms. Black knew that Oak Creek has an alluvial aquifer associated with it and she confirmed this by reference to ADEQ and ADWR resources.

132. Ms. Black's opinion is that there is a connection between the alluvial aquifer and Oak Creek. Oak Creek is a losing stream near Bella Terra, meaning the surface water flows from the Creek to subsurface or the lower aquifer or the groundwater.

133. BySynergy had the Bella Terra site evaluated by boring 24 test holes ranging from 24 to 141 inches deep. These boring show that the subsurface soils are fine, angular loamy sands. Below this material is fractured bedrock or Karstic material that is part of the Supai formation.

134. Karst geology can be translated to mean cavernous. Groundwater will flow through the bedrock in the fractures and cavernous areas, and the groundwater can create caverns.

135. It is possible that there is a hydrologic connection between the lower aquifer and the alluvial aquifer through fractures or caverns, but it may also be the case that the upper aquifer is perched on the sandstone. The more stringent BADCT standards are applied because of the possibility of the connection through fractures.

136. The Facility will meet the AWQS at the point of discharge, except for pathogens. Pathogens will meet the BADCT requirements at the point of discharge and the AWQS at the point of compliance.

137. The BADCT requirements for pathogen reduction are based on the presence of *e. coli* and the pathogen requirements for the AWQS are based total *coliform*.

138. Ms. Black's opinion is that the BADCT requirement is a better indicator of the presence of pollutants in the discharge from a WWTP because *coliform* sources include natural sources and animal waste, not just human waste.

139. The BADCT requirements for pathogens are more restrictive than the AWQS requirements because daily testing is required for BADCT. Under the applicable rule for AWQS, a positive test result requires a follow-up test within two weeks after the receipt of the positive test result. If the follow-up test is also positive, a violation has occurred. But the rule does not specify how quickly test results must be reported.

140. Ms. Black's opinion is that the BADCT requirement for pathogens is more rigorous than the AWQS requirement because the BADCT standard requires daily testing and only requires testing for contamination expected with humans.

EFFLUENT DISPOSAL

141. Ms. Black did not make any recommendations with respect to the disposal fields because the effluent will percolate into the ground and the engineers consider the design.

142. In the design that was initially approved by ADEQ, the primary disposal field (field #1) was not in the 100-year floodplain, but the secondary or reserve field (field # 2) was. The APP rules do not prohibit locating a disposal field in the floodplain. After disposal field 2 was eliminated and fields 3 and 4 added, none of the disposal fields are in the 100-year floodplain.

143. Ms. Black did not calculate a disposal rate for either the initial design or the final design, but she looked at the discharge impact area and her opinion is that in the initial design the disposal fields were adequate to absorb the proposed effluent discharge. As such, Ms. Black had no disagreement with the current Permit's enlarged disposal fields.

144. Ms. Black noted that Mr. Comparan had also looked at the discharge impact area and did not express any concern with the discharge rate.

145. Looking at the discharge impact area, Ms. Black's opinion is that the effluent may move through fractures and reach the lower aquifer or it may move laterally to the

alluvial aquifer, but the effluent would not reach the surface water because Oak Creek is losing in that area.

146. Effluent that reached the alluvial aquifer would percolate down and reach the lower aquifer.

147. It is possible that water from Oak Creek could seep under the disposal fields.

148. It is not likely that water from under the disposal fields would mingle in the alluvial aquifer with bank-storage water, but it is possible.

149. If the effluent flows through a fracture it could reach an underlying aquifer but the effluent is not a threat to water quality because the effluent meets the AWQS at the point of discharge, except for pathogens. For pathogens the AWQS are met at the point of compliance and BADCT is met at the point of discharge.

150. Ms. Black's opinion is that the disposal method is reasonable.

151. Ms. Black's opinion is that the Sentinel Well is properly located because it is between disposal field 1 and Carroll Canyon Wash where it should capture any vertical migration of effluent. Disposal fields 3 and 4 are not adjacent to the Wash, so no monitoring well is required.

152. Ms. Black's opinion is that the Permit conditions are protective of both AWQS and surface water quality standards.

Ms. Taunt

153. Ms. Taunt is ADEQ's Deputy Director of Water Quality, a position she has held for about 1 ½ years. Ms. Taunt has been employed by ADEQ for about 18 years.

154. Ms. Taunt is familiar with the surface water quality standards and the Clean Water Act.

155. ADEQ has regulatory authority over surface water quality. Under the CWA, the state establishes such standards for all non-tribal waters using a 3 step process: (1) Designated uses are established; (2) numeric criteria for pollutants that are protective of those designated uses are established; and (3) existing water quality is determined and if the water quality standards are met, discharges are limited to maintain that water quality; if the standards are not met, discharges are limited to avoid further degradation.

156. The state establishes the designated uses, and federal criteria are then used by the state to establish rules.

157. All watercourses must also meet narrative standards that are set by rule.

158. Oak Creek is designated as a unique water by rule. Oak Creek was the first such designation in Arizona. The designation was based on requests from the public and the recreational and ecological value of Oak Creek.

159. Carroll Canyon Wash is not a unique water, but because it is tributary to Oak Creek the tributary rule applies to Carroll Canyon Wash.

160. Each unique water is monitored by ADEQ once every 5 years. Oak Creek is monitored each winter and summer. There is a one-mile stretch of Oak Creek near Slide Rock that is listed as impaired due to e. coli bacteria. People, pets and wildlife are the source of the bacteria. Impaired waters are the subject of TMDL (total daily maximum load studies). A second phase TMDL study of Oak Creek is underway.

161. To limit the discharge of bacteria to Oak Creek on-site waste water treatment systems will be limited.

Mr. Zemp

162. Mr. Zemp is a vice-president with Santec where his duties include overseeing and reviewing plant designs. *See* Exhibit 521 (Mr. Zemp's CV).

163. Mr. Zemp has been working on residential WWTPs since about 1976 and has been involved on 300 to 350 facilities.

164. Mr. Zemp reviewed the design of the Bella Terra Facility but did not do any of the design work.

165. Mr. Zemp's opinion is that the Bella Terra Facility will be able to produce A+ effluent as required, both at full capacity and on start-up. Although each state's regulations vary, Mr. Zemp has worked on treatment plants that produce similar quality effluent in over 30 states.

166. The Bella Terra Facility has been designed with a lot of flexibility to handle different flow rates (e.g., the aeration basin has three input locations that allow use of 1/3, 2/3 or the entire basin).

167. Exhibit 57 (at Bates 1782) is a process flow diagram of the Facility. The Facility has a flow equalization basin ("FEB") that is designed to hold low flows, which is very important because in an activated sludge plant (such as this) you need the proper food to mass ratio (where the waste products are the food). In low flow conditions there will

not be the proper ratio and the FEB allows the plant to operate as a batch plant. In batch plant operation the system can be turned on and off to allow for testing of water quality. If the required water quality cannot be achieved in the FEB, the wastewater can be sent to the denitrifier or, if necessary, hauled to another WWTP.

168. The Facility design includes a provision to allow supplemental carbon to be added; this is important because there must be enough bio-mass for the system to operate properly and the supplemental carbon can be a feed source.

169. A WWTP will always experience variations in flow because people tend to follow the same schedules (e.g. shower in the morning, go to work, and then return home). The FEB allows the Facility to handle this daily variation and the low flows that are likely to occur when only the first few homes in the Bella Terra project are occupied.

170. Any well designed WWTP can meet the required effluent quality, the key is the operator. ADEQ requires a WWTP such as the Bella Terra Facility to be operated by a properly licensed operator (Grade 3).

171. The term "package plant" has no well defined technical significance, but it is sometimes used in a pejorative sense because such plants are not built entirely on the site.

172. Mr. Zemp was familiar with the Cross Creek development. Santec provided the WWTP for that development. Santec also operated that WWTP for a number of years and did not experience any problems at low flows. Santec no longer operates the Cross Creek WWTP.

173. Mr. Zemp was familiar with endocrine disrupters. Dealing with these has never been a permit issue in work he has been involved in, which occurred in about 40 states and overseas.

Mr. Beckwith

174. Mr. Beckwith is registered engineer in Arizona and California and is a partner and vice-president of Shephard-Wesnitzer.

175. Shephard-Wesnitzer provides all aspects of subdivision design and layout including water and wastewater systems.

176. Shephard-Wesnitzer was hired by BySynergy to provide water and wastewater design for the Bella Terra project. Santec was hired to design the Facility itself (i.e., the WWTP).

177. Mr. Beckwith's duties include managing projects related to subdivision development. He has participated in about 25 projects that are similar to the Bella Terra project, all in Northern Arizona.

178. Exhibit 79 Sheet E 1 represents the current site plan showing the locations of Oak Creek and Carroll Canyon Wash, disposal fields 1, 3, and 4, the WWTP, and the sentinel well.

The SWPPP

179. Mr. Beckwith had knowledge of the storm water prevention plan permit ("SWPPP") for Bella Terra. All projects have similar plans that are designed to prevent silt and related pollutants from getting into streams.

180. Representatives for ADEQ's Northern Regional Office ("NRO") have made numerous site visits to Bella Terra during the project. Mr. Beckwith has worked with the NRO for about 10 years and believes he has a good working relationship with that office.

181. The SWPPP was modified on November 1, 2006 based on input from ADEQ. *See* Exhibit 110. Shephard-Wesnitzer has responded satisfactorily to all issues raised by ADEQ with respect to the SWPPP. There was an area that ADEQ found a problem with, but that area now has a lot of grass and natural vegetation growing. Grass is one of the best materials for preventing silt from reaching streams.

182. A "self-contained" site is one in which all the storm water runoff remains on the site. Much of the Bella Terra site is self-contained by berms.

183. Mr. Beckwith's opinion is that ADEQ inspectors were at the site more than is typical given the nature of the project. Mr. Beckwith also worked on the Cross Creek subdivision, which also had an SWPPP. To Mr. Beckwith's knowledge, no one from ADEQ inspected that site.

184. Exhibit 1058 at Bates 452, 456 and 459 are photographs of silt fencing. Mr. Beckwith agrees that the silt fences shown are not in a fully functional mode and are not in conformity with the SWPPP. Silt fencing requires regular maintenance and repair.

Storm water, wind and construction activities can all lead to damage. It was not surprising to Mr. Beckwith that there would be some areas in which the silt fence needed repair. But Mr. Beckwith's opinion is that the risk that silt would reach the wash or Oak Creek is limited by the berms at the site.

THE 100-YEAR FLOODPLAIN

185. The 100-year floodplains for Carroll Canyon Wash and Oak Creek are marked on Exhibit 79 Map E1. Mr. Beckwith (or Shephard-Wesnitzer) did a hydrologic analysis for Carroll Canyon Wash, which analysis was approved by Yavapai County. The Oak Creek floodplain was digitized from FEMA maps. Exhibit 8 is the FEMA map for Sedona, which shows an effective date of 2001, but Mr. Beckwith did not know when that map was last updated.

186. None of the home lots are in the 100-year floodplain. No part of the WWTP or the disposal fields are in the 100-year floodplain.

OTHER ISSUES

187. Mr. Beckwith analyzed and compared the pollution from septic tanks that served the 26 mobile homes that were on the property before BySynergy bought the site to the pollution that will be discharged from the Facility. Mr. Beckwith's conclusion is that the Facility will produce less pollution than the septic systems did. A typical septic system has BOD of about 150 mg/l, total nitrogen of about 75 mg/l, and total suspended solids (TSS) of about 23 mg/l. Mr. Beckwith's analysis shows that the WWTP will result in reductions of about 73%, 46%, and 23%, respectively. *See* Exhibit 59.

188. In August 2006, Mr. Beckwith saw Carroll Canyon Wash and Oak Creek in a condition similar to that shown in Exhibit 1059 at Bates 459 and 460 (i.e., photographs about which Mr. Myers testified). At that time he walked upstream and observed that Carroll Canyon Wash was silt laden above the Bella Terra project. Carroll Canyon Wash drains about one-half of Sedona. Mr. Beckwith did not believe that the silt shown in Exhibit 1059 was from the Bella Terra site, but it was possible that some of it was. Mr. Beckwith made the information from his August 2006 observations available to ADEQ.

Mr. Journell

189. Mr. Journell has been a registered geologic engineer in Arizona for about 20 years and has about 20 to 25 years experience. He has been employed by South-west Groundwater Consultants for about 15 years. *See* Exhibit 515 (Mr. Journell's resume).

190. Mr. Journell has been actively involved in about 75 projects that investigated the fate and transport of contaminants or pollutants.

191. Mr. Journell was not directly involved with BySynergy's APP Application.

192. BySynergy hired South-west to conduct an environmental site assessment of the Bella Terra property before BySynergy purchased that land. Before the purchase was made the site was referred to as the Schuerman Ranch.

193. Part of that site assessment was to determine whether or not *coliform* in Oak Creek was coming from the existing septic tanks on the Schuerman Ranch property. Mr. Journell concluded that the *coliform* in Oak Creek was not coming from the Schuerman Ranch. *See* Exhibit 81 (report prepared by Mr. Journell to document the results of the environmental assessment).

194. Mr. Journell's conclusion was based on observations of site conditions, the distribution of bacteria in the creek (higher levels on the east bank than on the west bank), and observations that there was enhanced vegetation and moisture on the east bank, but not the west bank. There were bacteria present near both banks, but the distribution showed more on the east bank. It was expected that there would be bacteria on both banks because the sources are both natural and septic tanks and low levels of bacteria were observed everywhere, but the elevated levels were only observed on the east bank. If the bacteria were coming from the Bella Terra site, there would have been more bacteria on the west bank.

195. Mr. Journell also concluded that there was no significant lateral migration of wastewater from the existing septic systems on the Schuerman Ranch (Bella Terra) site. This conclusion was based on observations of the septic tank locations, the Carroll Canyon Wash drainage area, and sampling analysis of Carroll Canyon. Three conditions were all present on the east bank, none of which were present on the west ban: (1) higher levels of bacteria; (2) enhanced vegetation; and (3) spots with moisture.

Mr. Zito

196. Mr. Zito is the managing member of BySynergy LLC that owns Bella Terra.

197. BySynergy bought the property on July 26, 2002 when it was known as the Schuerman Ranch. Mr. Schuerman, the former owner, signed an Affidavit describing the history and condition of the land prior to BySynergy's purchase. *See* Exhibit 529.

198. Mr. Zito is not an engineer or geologist, but he did hire experts in these fields.

199. Mr. Zito has read the Permit and he understands that ADEQ has authority to re-open and amend the Permit.

200. The Facility's capacity is 24,910 gallons per day and the discharge rate is limited to 0.219 gallons per day per square foot ("gpdpsf") of disposal field, which limits the discharge to 14,910 gallons per day.

201. BySynergy intends to get a reuse permit for the remaining 10,000 gallons per day and use that effluent to water landscaping on common areas at Bella Terra. If BySynergy cannot get the reuse permit it will attempt to sell the 10,000 gallons a day to other developers in the area. Mr. Zito understands that there is a market for such effluent.

202. Mr. Zito understands that the 10,000 gallons per day of reuse-effluent cannot be applied to the disposal fields.

203. The Permit has evolved over time as a result of concerns raised by the public. Originally there were two disposal fields (fields 1 and 2) but field 2 was to be held in reserve and all the effluent would have been discharged to field one at a rate of 0.75 gpdpsf. Due to the public concern, BySynergy voluntarily added fields 3 and 4 and reduced the total discharge from 24,910 gallons per day to 14,910. The 14,910 gallons will be discharged over all three fields, which results in the rate being reduced from 0.75 gpdpsf to the current Permit-rate of 0.219.

204. Mr. Zito was familiar with the silt fences and the need to monitor and repair these fences. When a silt fence is in disrepair it is fixed. There have been acts of vandalism to the fences.

205. No top soil has been removed from the Bella Terra site. Plants were removed but not any top soil.

206. Dr. Trotta did not have Mr. Zito's permission to enter the Bella Terra site. Mr. Meyers and Ms. Boelter did not have Mr. Zito's permission to enter the Bella Terra site.

Mr. Monihan

207. Mr. Monihan is a project manager and engineer with Shephard-Wesnitzer, a position he has held for about 1 ½ years; prior to that he was with Environmental and Engineering Consultants.

208. Mr. Monihan has over 30 years of experience, and is registered as a Civil Engineer, a Sanitary Engineer and a Land Surveyor. *See* Exhibit 519 (Mr. Monihan's resume).

209. Mr. Monihan has been actively involved in about 100 wastewater treatment projects. His duties have included design and evaluation.

210. When Mr. Monihan joined Shephard-Wesnitzer the design for Bella Terra was complete, but due to the controversy (i.e., issues raised at the public hearings) he was asked to conduct a review. As part of that review he has been to the site and reviewed available documentation.

211. It is fair to look at the project as three components: wastewater collection, treatment and disposal. The collection was not controversial and Santec did the treatment design, so Mr. Monihan looked in detail at only the effluent disposal.

212. The design calls for disposal of 14,910 gallons per day per the Permit. This effluent will be discharged through drip emitters into the 3 disposal fields, sequenced about 3 times per day. The volume will be controlled by a pump.

APPLICATION RATES

213. The original application rate (0.74 gallons per day per square foot of disposal field ("gpdpsf")) was determined based percolation tests. During the permitting process that rate was reduced to the current Permit-rate of 0.219 gpdpsf.

214. In Arizona, application rates are taken from tables based on the rates measured during the percolation test. The tables have been in the Administrative Code since about 2000. Similar values were in guidance documents beginning about 1970.

215. The permitted disposal rate of 0.219 gpdpsf is more protective of the environment than the original rate of 0.74 gpdpsf because the pollutant load is less at the lower rate. This lower rate also improves the hydraulic character.

216. The percolation test should be conducted in the depth at which the water is to be disposed of. For Bella Terra that is at about 12 inches.

DISPOSAL FIELDS

217. Disposal field locations are determined following ASTM procedures. These procedures call for going to the site and eliminating areas that are not appropriate for reasons such as set back requirements. After that, test holes are dug in areas that look to have promising soils. The Sedona area has lots of rocks in the soils that may require digging in multiple locations. Then the actual percolation tests are conducted.

218. There is adequate data for the disposal fields. Exhibit 79 (sealed by Mr. Monihan) gives data for test holes showing either the stop depth or the depth of refusal. Refusal indicates that the backhoe was not able to dig further. Refusal could be caused by a rock shelf or a large rock.

219. The soil profile test holes for the Bella Terra site are generally 10 to 12 feet deep. Since those test holes were completed the rule has been changed to require test holes to be completed to 12 feet, whereas previously 10 feet was common.

220. Test holes 15 through 20 were all completed in disposal field 1, at depths of 2 to 10 feet. The percolation rate as 10, which rate is consistent with loamy sand, and a very good percolation rate. Mr. Monihan's opinion is that the data from those test holes shows that disposal field 1 is adequate.

221. For a drip system such as Bella Terra's, Mr. Monahan would want to see at least 24 inches of soil. This is a conservative value in that the regulations might allow installation of a drip system with less than 24 inches.

222. One test hole does show about 15% cobbles at two to four feet, but otherwise the texture, color and soil properties are consistently the same. It is considered problematic if the percentage of cobbles exceeds 50%.

223. Whether or not the integrity of a percolation test would be affected by the removal of soil would depend on the amount of soil removed.

224. Mr. Monihan would not offer an opinion on whether or not whether soil at a given site had been removed without asking for a topographic survey.

225. Clearing and grubbing is a process by which vegetation is cleared from a site that may include incidental removal of soil. Grading refers to the actual removal of soil.

OTHER DATA

226. Mr. Monihan relied on two other important sources of data with respect to the disposal fields. The Hydrogeology report by South-west Groundwater has well logs that show the deeper soils and, although that is not considered design data, it gives geologic information. More important to Mr. Monihan was that he had visited the Bella Terra site.

227. During his site visit, Mr. Monihan walked along both Oak Creek and Carroll Canyon Wash and examined the banks looking for any exposed cuts that showed evidence of seepage. During his examination, Mr. Monihan observed rock outcrops along the wash, but these outcrops showed no sign of seepage.

228. Mr. Monihan heard Mr. Journell testify as to Mr. Journell's conclusion that there was no lateral seepage from the septic tanks that were present on the Bella Terra property before BySynergy purchased the land. Mr. Journell's testimony and Phase II Report are additional evidence that the effluent from the Facility will migrate vertically, not laterally.

229. Mr. Monihan's opinion is that the effluent will not pond on the surface of the disposal fields based on a review of irrigation guidelines that show that soils such as those at Bella Terra can accept water at a rate of 0.4 gallons per hour.

DR. TROTTA'S STATEMENTS TO MR. MONIHAN

230. Mr. Monihan knows Dr. Trotta professionally through the American Society of Civil Engineers. The two have at times spoken about projects and bounced ideas off one another. Mr. Monihan served on the Board for a grant that Dr. Trotta administered.

231. In February 2007, Mr. Monahan and Dr. Trotta were in attendance at a professional colleague's open-house. At that time, although Mr. Monihan did not want to talk about the Bella Terra project, Dr. Trotta brought the issue up. Dr. Trotta first told Mr. Monihan derogatory names for the project and BySynergy that were being used. Dr. Trotta then told Mr. Monihan that the intention was to push the issue such that BySynergy succumbed to financial pressure, at which time "they" would acquire the land and develop it. Dr. Trotta did not specify clearly who "they" were.

232. Mr. Monihan was shocked by Dr. Trotta's admission because it represents behavior that is not appropriate for an engineer. On March 12, 2007 Mr. Monihan signed a sworn declaration providing essentially these same details. *See* Exhibit 548.

233. Although the declaration is not independent of Mr. Monihan's testimony, the declaration is important because it was disclosed to Appellant prior to the hearing, and Appellant presented no rebuttal evidence and did not deny that this conversation had occurred.

APPELLANT'S ALLEGATIONS and FINDINGS RELATED TO EACH COUNT

Count 1 – Violation of A.R.S. § 49-243(B)(1) and A.A.C. R18-9-A202 (Failure to Ensure the Greatest Degree of Discharge Reduction Achievable).

234. Appellant alleges that soil evaluations and percolation tests on which the adequacy of the disposal fields was based are no longer valid because the site has been mass graded, and that there is no site-specific soil information to show that the disposal fields meet BADCT (i.e., the greatest degree of discharge reduction achievable).

235. A.R.S. § 49-243(B)(1) requires a showing that there is the greatest degree of discharge reduction achievable. This showing is accomplished by meeting BADCT or the best available demonstrated control technology. For a wastewater treatment plant such as the Facility, BADCT can be shown, and the statutory requirement met, by meeting the provisions of A.A.C. R18-9-B201 through R18-9-B204. *See* A.R.S. § 49-243(c) and A.R.S. § 49-243.01.

236. Mr. Zito gave credible testimony that no soils have been removed from the site, although vegetation has been removed. Mr. Monihan gave credible testimony that removal of vegetation is not grading, but is clearing and grubbing. The only evidence of grading is Dr. Trotta's and Ms. Boelter's testimony. Dr. Trotta admitted that his conclusion was based on implication (i.e., his interpretation of aerial photographs) and Ms. Boelter's testimony was no more than an assertion without supporting or corroborating details. The preponderance of evidence shows that the site has not been mass graded.

237. The preponderance of evidence shows that the soil evaluations and percolation tests are valid.

238. BADCT for the Facility is determined prior to discharge to the disposal fields, and does not depend on the discharge-site soils. The preponderance of evidence shows that the Facility meets the BADCT requirements.

239. Appellant has not shown that ADEQ's decision was arbitrary, unreasonable, unlawful, or based on a technical judgment that is clearly invalid with respect to the issues it raised in Count 1.

Count 2 – Violation of A.A.C. R18-9-109 (Misleading Public Information).

240. Appellant alleges that "ADEQ provided for the public participation process in accordance with A.A.C. R18-9-109, however, the agency misled the public in fact sheets published with the permit." NOA at ¶ 24. According to Appellant, ADEQ misled the public because Fact Sheet FS 07-05 implies that if the Permit were not approved "53 septic systems would be approved instead" and according to Appellant the site would not support 53 septic systems.

241. There was no evidence of appreciable weight to show that any member of the public was misled and Appellant admits that ADEQ met that applicable rule. There was also no evidence of appreciable weight to show that the site could not support 53 septic systems. Ms. Robertson gave credible testimony that the fact sheet at issue is accurate, but was produced by and for lay people. As such it is reasonable that the fact sheet would not include a rigorous or detailed discussion of the issues that an applicant for a septic system permit would face.

242. Appellant has not shown that ADEQ's decision was arbitrary, unreasonable, unlawful, or based on a technical judgment that is clearly invalid with respect to the issues it raised in Count 2.

Count 3 – Violation of A.R.S. § 49-243(B)(1) (Failure to Ensure the Greatest Degree of Discharge Reduction Achievable).

243. Appellant alleges that ADEQ has assumed that BySynergy will reuse 10,000 gallons a day in order to meet the Permit's discharge limit and that ADEQ did not analyze the impact on the site from this reuse.

244. The Permit sets the discharge limit at 14,910 gallons per day, which is 10,000 gallons less than the Facility's design capacity. The Permit's discharge limit is firm and

if the Facility operates at above 14,910 gallons per day another method of disposal will be required for any volume above that limit.

245. BySynergy plans to reuse 10,000 gallons per day for landscaping and BySynergy will be required to have a reuse permit to do so. Reuse is not regulated by the APP program and, consequently, BADCT does not apply to any proposed effluent reuse.

246. Appellant has not shown that ADEQ's decision was arbitrary, unreasonable, unlawful, or based on a technical judgment that is clearly invalid with respect to the issues it raised in Count 3.

Count 4 – Violation of A.R.S. § 49-243(B)(1) (Inadequacies in "Optional" Reuse System).

247. Appellant alleges that the Facility's design is inadequate because seasonal variability in plant uptake of effluent was not considered in conjunction with, what Appellant terms, the "reuse option."

248. As discussed above, the effluent reuse is not regulated in the APP program and, consequently, BADCT does not apply. To the extent that Appellant intends this count to extend to the disposal fields, the allegation is without merit.

249. The percolation test and related calculations show that the disposal fields are adequate for the entire Permitted disposal volume without any plant uptake. Seasonal variation in plant uptake will not affect this determination.

250. Appellant has not shown that ADEQ's decision was arbitrary, unreasonable, unlawful, or based on a technical judgment that is clearly invalid with respect to the issues it raised in Count 4.

Count 5 – Violation of A.A.C. R18-11-112 (Lack of Surface Water Monitoring and Analysis for Oak Creek).

251. Appellant alleges that to comply with A.A.C. R18-11-112 ADEQ must analyze the effect of the Facility's effluent on Oak Creek and determine if surface water monitoring should be required.

252. Discharge to Oak Creek is not allowed by the Permit. The preponderance of evidence shows that it is unlikely that the effluent will reach Oak Creek. Nevertheless, the Permit requires weekly inspections to verify that no seepage is occurring and

requires installation of, and monthly monitoring of the Sentinel Well to verify no discharge is occurring.

253. Appellant has not shown that ADEQ's decision was arbitrary, unreasonable, unlawful, or based on a technical judgment that is clearly invalid with respect to the issues it raised in Count 5.

Count 6 -- Violation of A.R.S. § 49-243(B)(1) (Inaccurate and/or Unrepresentative Hydro-geological Studies).

254. Appellant alleges that ADEQ did not have sufficient hydrogeologic information to support issuance of the Permit.

255. Appellants assert that testimony by Dr. Ron Blakey and Dr. Trotta at the July 20, 2006 public hearing supports a finding that the hydrogeology information was not sufficient. Appellant disclosed Dr. Blakey as a witness, but he did not appear or testify, and no reason for his failure to appear was given. Dr. Trotta testified that he was not a geologist or a hydrogeologist. Consequently, the only expert testimony with respect to hydrogeology presented by Appellant was that of Mr. Comparan. And Mr. Comparan provided credible testimony that the hydrogeologic information was sufficient to meet the requirements of the applicable section of the Administrative Code.

256. Ms. Black also provided credible testimony that there is site specific geologic information that meets the applicable rules.

257. Dr. Blakey's public hearing testimony appears to have been conjecture and, because Dr. Blakey was not subject to cross examination the opinions he expressed at the public hearing are accorded no appreciable weight.

258. Appellant has not shown that ADEQ's decision was arbitrary, unreasonable, unlawful, or based on a technical judgment that is clearly invalid with respect to the issues it raised in Count 6.

Count 7 – Violation of A.R.S. § 49-243(B)(1) (Inability of Proposed System to Effectively Produce A+ Effluent).

259. Appellant alleges that the Facility will not be able to produce A+ effluent, but presents no evidence in support of this allegation.

260. BADCT does not require A+ effluent, and the preponderance of evidence shows that the Facility is capable of producing A+ effluent.

261. Appellant has not shown that ADEQ's decision was arbitrary, unreasonable, unlawful, or based on a technical judgment that is clearly invalid with respect to the issues it raises in Count 7.

Count 8 -- Violation of A.R.S. § 49-243(N) (Noncompliance with other Permits is Relevant in Determining Whether or not to Issue an Aquifer Protection Permit).

262. Appellant alleges that ADEQ should have considered BySynergy's "apparent inability to comply with all environmental permits and thus denied the APP [i.e., the Permit]." NOA at ¶ 62.

263. Contrary to Appellant's allegation, ADEQ did consider BySynergy's compliance record and determined that BySynergy's compliance record was not a sufficient basis to deny the Permit.

264. Appellant presented testimony to the effect that BySynergy had committed violations since the Permit was issued, but the only proven existing violation is the stop work order related to grading at the site, which is not a violation of an environmental permit, and is not sufficient evidence to show that BySynergy is not capable of carrying out the terms of the Permit. *See* A.R.S. § 49-243(N).

265. Appellant's NOA has long excerpts from reports prepared by Environmental & Business Conflict Resolution Consulting ("EBC") in support of its allegation, but Appellant never offered the reports into evidence and the reports' author was not called as a witness. Allegations are not evidence and no weight is given to the excerpts.

266. Appellant has not shown that ADEQ's decision was arbitrary, unreasonable, unlawful, or based on a technical judgment that is clearly invalid with respect to the issues it raises in Count 8.

Count 9 – Violation of Clean Water Act.

267. Appellant alleges that after the Permit was issued, BySynergy was required to obtain an "after the fact" Section 404 permit by the Army Corp of Engineers, which is correct.

268. BySynergy has obtained the required Section 404 permit. The preponderance of evidence does not show that at the time of the hearing BySynergy has any existing Clean Water Act violations or that BySynergy is not capable of carrying out the terms of the Permit.

269. Appellant has not shown that ADEQ's decision was arbitrary, unreasonable, unlawful, or based on a technical judgment that is clearly invalid with respect to the issues it raises in Count 9.

Count 10 – (Additional Pollutants Known to Occur in Wastewater are not Accounted for).

270. Appellants allege that an analysis of the ability and effectiveness of the Facility to treat various unregulated substances is necessary, and that BySynergy has not demonstrated that the Facility is capable of treating these substances. But Appellant admits that "[t]he law does not mandate that these chemicals be tested for and/or treated." NOA at ¶ 70. And Appellant presented no credible evidence that these chemicals actually pose a risk to public health or safety.

271. ADEQ witnesses provided credible testimony that ADEQ does not have authority to consider such unregulated substances on a permit by permit basis. ADEQ witnesses also provided credible testimony that the current research shows that these chemicals do not pose a health and safety risk and that wastewater treatment plants, such as the Facility, are effective at removing the chemicals.

272. Appellant has not shown that ADEQ's decision was arbitrary, unreasonable, unlawful, or based on a technical judgment that is clearly invalid with respect to the issues raised in Count 10.

CONCLUSIONS OF LAW

1. Appellant bears the burden of proof, and the standard of proof on all issues in this matter is by a preponderance of the evidence. *See* A.A.C. R2-19-119.

2. A preponderance of the evidence is "[e]vidence which is of greater weight or more convincing than the evidence which is offered in opposition to it; that is, evidence which as a whole shows that the fact sought to be proved is more probable than not." BLACK'S LAW DICTIONARY 1182 (6th ed. 1990).

3. Decisions by the Director of ADEQ shall be affirmed by the Water Quality Appeals Board unless, considering the entire record before the board, it concludes that the Director's decision is arbitrary, unreasonable, unlawful or based upon a technical judgment that is clearly invalid. A.R.S. § 49-243.

4. Appellant presents virtually no evidence of appreciable weight in support of any of its 10 Counts. Appellant has not met its burden to show that ADEQ's decision to issue the Permit is arbitrary, unreasonable, unlawful or based upon a technical judgment that is clearly invalid.

5. Because Appellant has not met the burden of proof, Appellant's appeal should be dismissed and the decision to grant the Permit should be affirmed.

RECOMMENDED ORDER

IT IS RECOMMENDED that the Water Quality Appeals Board dismiss Appellant Sierra Club, Grand Canyon Chapter and Red Rock Rural Community Association's appeal and affirm the Arizona Department of Environmental Quality's decision to issue APP No. P-105588.

Done this day, November 5, 2007

Thomas Shedden
Administrative Law Judge

Original transmitted by mail this
1 day of November, 2007, to:

Toni Towne, Clerk
Water Quality Appeals Board
100 N. 15th Avenue, Suite 402
Phoenix, AZ 85007

By Chris Fisher

A 10: 24

NOV 5 '07 PM 5:37

2007 NOV -8 A 10: 24

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OFFICE OF THE DIRECTOR